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DISPLAY METHOD FOR MULTIPLE LAYERED SCREENS

Abstract:

Abstract of WO0115127

A method of displaying data or images, on a multi-level screen display, assigns screen designation codes to respective software components, to determine the physical screen on which the corresponding images or software components are displayed. The screens may comprise layered liquid crystal displays. The method allows a user to see overlaying objects at the same time. For example, with drawing software one can simultaneously display toolbars or menus on a front screen, and a drawing image on a background screen. Data supplied from the esp@cenet database - Worldwide

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: DISPLAY METHOD FOR MULTIPLE LAYERED SCREENS

(57) Abstract: A method of displaying data or images, on a multi-level screen display, assigns screen designation codes to respective software components, to determine the physical screen on which the corresponding images or software components are displayed. The screens may comprise layered liquid crystal displays. The method allows a user to see overlaying objects at the same time. For example, with drawing software one can simultaneously display toolbars or menus on a front screen, and a drawing image on a background screen.

DISPLAY METHOD FOR MULTIPLE LAYERED SCREENS

TECHNICAL FIELD

This invention relates to software visual effects.

BACKGROUND ART

5   Many software programs these days display information on a screen using effectively a multi-layered approach.

For example, a drawing package may have a central area which the software user can draw upon.

In a typical drawing package there are many drop down menus, tool bars, cursors or

10   templates which effectively overlay the drawing on the screen. The reason for this is that there is only limited screen area available. Thus, for the user to be able to view the functions to be selected, some of the drawing space has to be borrowed for this.

Often, the user is placed in the undesirable position of having to move around the tool bars and menus if possible, or alternatively move the drawing (or whatever file the

15   user is working on) so that the user can actually see parts of the drawing formerly obscured by the menus and so forth.

There is another related problem experienced by software users, particularly in relation to drawing packages, but not exclusively.

Often when compiling a drawing, it is necessary to compile the drawing using several

20   layers of "objects". A typical drawing function gives the user the ability to determine whether the object is viewed as being at the back of the picture or overlaying everything at the front of the picture. This can in some cases lead to the objects at the back of the picture being obscured by larger objects at the front of the picture. Thus,

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the user cannot readily select the object at the back of the picture with it being obscured.

This is understandably frustrating and can impede the users' ability to work efficiently, often requiring the user to move the front object so as to gain access to the

5   back object.

This frustration is not limited to drawing packages. It can also be frustrating to not having ready access to the multiple levels in such diverse applications as geographical information system (GIS) programs, including medical models, instrumentation using browsers for the internet or game software, for example flight simulators.

10   All of the aforementioned packages have information on various levels with which the user would desire ready access to.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

Further aspects and advantages of the present invention will become apparent from

15   the ensuing description which is given by way of example only.

DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided a method for creating a visual effect in the display of software wherein

the software is for the presentation of data or images on a screen using software

20   functions,

the method characterised by the steps of

a)   assigning a particular screen designation code to some software components,
        and

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b)   assigning other screen designation code to other components of the software -

wherein the screen designation code determines which physical screen the image or software components is displayed in a multi-level screen display.

In further embodiments of the invention, the software components being assigned a

5   particular screen designation code all relate to images being manipulated. However this should not be seen as limiting. The image being manipulated can mean the manipulation of any image, whether the image is in text format, numbers, graphical or otherwise.

For example, the present invention can be used in relation to software for word

10   processing, drawing, financial and scientific information, flight simulators, internet browsers, spreadsheets, slot machines, instrumentation, medical programs, mapping programs, games and the like.

In some embodiments of the present invention certain software components may be reference data of lesser importance than other data. This, is the data of greater

15   importance may be assigned to the front screen where as data of lesser importance may be placed on background or midground screen. In preferred embodiments if there is an image on the screen which is being manipulated via software functions – even if it is a game scene "being travelled through" - it has a particular screen designation separate to other functions.

20   It is envisaged that in most cases, the other components of software are standard features which come with the software program. For example, screen template, drop down menus, function keys, cursors, tool bars, head-up displays and the like. However, in some embodiments of the present invention, the different components of the image may be assigned a separate designation code, for example an object which

25   is laid over part of the image.

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In some embodiments of the present invention, the method can be applied to existing software, for example Microsoft Word™, Microsoft Powerpoint™, Adobe Photoshop™, MacroMedia Director ™ and so forth. However, in other embodiments of the present invention there may be created software which uses the principles

5   behind the present invention.

The screen designation code is merely a code that identifies which physical screen the image or software component is displayed upon.

The inventors of the present invention also invented a multi-level screen display and this is described in detail in PCT Application Nos. PCT/NZ98/00098 and

10   PCT/NZ99/00021.

This is a device which is created by combining multiple layers of selectively transparent screens. Each screen is capable of showing an image. In preferred embodiments, the screen layers are liquid crystal displays. Preferably the screens are aligned parallel to each other with a preset distance between them.

15   With this invention, images displayed on the screen furthest from the view (background screen), will appear at some depth behind the images displayed on the screen closest to the viewer (foreground screen). The transparent portions on the foreground screen will allow viewers to see images displayed on the background screen.

20   This arrangement of layering multiple screens allows images to be presented at multiple levels giving the viewer true depth without use of glass or lens.

The present invention shall now refer to use with a multi-level screen as described above although this should not be seen as limiting.

It should be appreciated that although reference shall be made throughout this

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specification now to only background and foreground screens, other aspects of the present invention may utilise more than two screens. For example, with drawing packages all of the readily useable software functions may be on the foreground while various layers of the drawing may be on the multiple screens behind the foreground

5   screen.

With the present invention, a screen designation code may be used to place all of the standard software functions, templates, tool bars and the like on the foreground screen. However, the image being worked upon may be placed on the background screen. This arrangement allows the user of the software to effectively look behind

10   the foreground components to view the image being manipulated.

This ability may be enhanced if the traditional opaque background to the functions has varying shades of transparency. This feature may be imparted by a version of software in accordance with the present invention.

Thus, there is now no requirement for the user to move around on screen various

15   toolbars and the like so as to get a full view of the image.

Further, if the package is for example, a drawing package, the foreground and background components may actually be on different screens, again allowing the viewer to view and possibly select the drawing components without one obscuring the other.

20   To allow the drawings components to be readily and/or manipulated, the components themselves may have different transparencies. Further, the traditional white palette may be fully transparent.

There are a number of methods by which the present invention can be implemented.

In some embodiments of the present invention it may be that existing software is

coded to identify screen functions which are normally "always on top" or "always at back". If this is the case, one embodiment of the present invention will be an interface that identifies the coding on existing software with these identifiers and assign the various software components eg toolbar to the appropriate foreground or

5　　background screen.

The interface maybe a patch for existing software, a display driver, a library file or a new front end for multiple existing software packages or a completely new operating system. Instead of software, graphic cards may be used to divide the images appropriately. This will increase the speed of operation considerably.

10　　Further aspects of the present inventions provide a media which can contain instructions for the operation of method as described.

The background fill of 'always on top' functions can be made fully or partially transparent by the present invention.

With existing software that does not have such coding, it may be necessary to

15　　implement the present invention by having customised software in which the software developer specifies the software routines which cause the appropriate components and images to go on the appropriate screens.

Other aspects of the present invention include not just interface programs which enable existing software to be used on multi-level displays, but original software

20　　programs which likewise utilise the concept of having a screen for the file or image being worked upon and other screens for more standard software functions, templates and the like.

There is software available which can be used with multiple monitors placed side by side. This software has screen designation codes as such, in that the x-axis

25　　coordinate determines on which of the monitors the information is to be displayed. It

is envisaged that this software could be used in the present invention with a code which normally would assign an image to a particular monitor will now assign that image or data pixel to one of the screens in a multi-level display.

Other aspects of the present invention includes an operating system which
5   incorporates the principles of the present invention as previously described and also a web browser which also incorporates the principles as previously described.

It can be seen that the present invention adds a new dimension, literally and figuratively to existing software and potential for new software.

BRIEF DESCRIPTION OF DRAWINGS

10   Further aspects of the present invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

Figure 1   illustrates a prior art screen display, and

Figure 2   illustrates a foreground screen display in accordance with one
15   embodiment of the present invention, and

Figure 3   illustrates a background screen display in accordance with one embodiment of the present invention.

BEST MODES FOR CARRYING OUT THE INVENTION

With respect to Figure 1, there is illustrated a typical screen display found in
20   commercial software. in this case, the commercial software is Microsoft Powerpoint™.

On this display there is an external template (1), two toolbars (2, 3), a drop down menu (4) and an image to be manipulated (5) on a palette (6).

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It can be seen that the toolbars (2, 3) and drop down menu (4) obscure the image (5) and palette (6).

With the present invention, the common components of the software can be placed on the foreground screen of a multi-level screen display as illustrated in Figure 2. It

5   should be noted that the palette (6) and the image (5) are not displayed on the foreground screen.

Instead, the image (5) is displayed on a background screen as illustrated in Figure 3. With the present invention there is no need to display a palette.

The separation of the image (5) from the standard software components (1, 2, 3 and

10 4) is achieved by the present invention assigning screen designation codes to each of these which determine whether they are placed on the foreground or background screen. Again, it should be appreciated that there may be more than two screens and these components can be placed on any of these.

Not illustrated is the effect of having the foreground screen over the background

15 screen as this is a 3-dimensional effect difficult to show. However, as the foreground screen is a physical distance from the background screen and transparent in places to respect to the background screen, it is possible for the user to look around and behind the tool bars and drop down menu to view the image on the background screen.

Aspects of the present invention have been described by way of example only and it

20 should be appreciated that modifications and additions may be made thereto without departing from the scope of the appended claims.

CLAIMS:

1.   A method of creating a visual effect in the display of software wherein

the software is for the presentation of data or images on a screen using software functions,

the method characterised by the steps of,

    a)   assigning a particular screen designation code to some software components, and

    b)   assigning other screen designation codes to other components of the software -

wherein the screen designation codes determines which physical screen the image or software components are displayed in a multilevel screen display.

2.   A method as claimed in claim 1 wherein an image to be manipulated is assigned a particular screen designation code.

3.   A method as claimed in claim 1 or claim 2 wherein the specific software components are standard software features.

4.   A method as claimed in any one of claims 1 to 3 characterised by the further step of applying the method to existing software.

5.   A method as claimed in any one of claims 1 to 3 characterised in the further step of applying the method to customised software.

6.   A method as claimed in any one of claims 1 to 5 when utilised in a multilevel screen display.

7.   A method as claimed in any one of claims 1 to 6 wherein the screens have variable transparencies.

8.   A method as claimed in any one of claims 1 to 7 wherein the method is encoded within a display driver.

9.   A method as claimed as any one of claims 1 to 7 wherein the method utilises software originally written for multiple monitor systems.

10. A method substantially as herein described with reference to and as illustrated by the accompanying drawings.

11. Media incorporating instructions for the operation of the method as claimed previously or described herein.

12. An operating system incorporating a method as claimed in any one of claims 1 to 10.

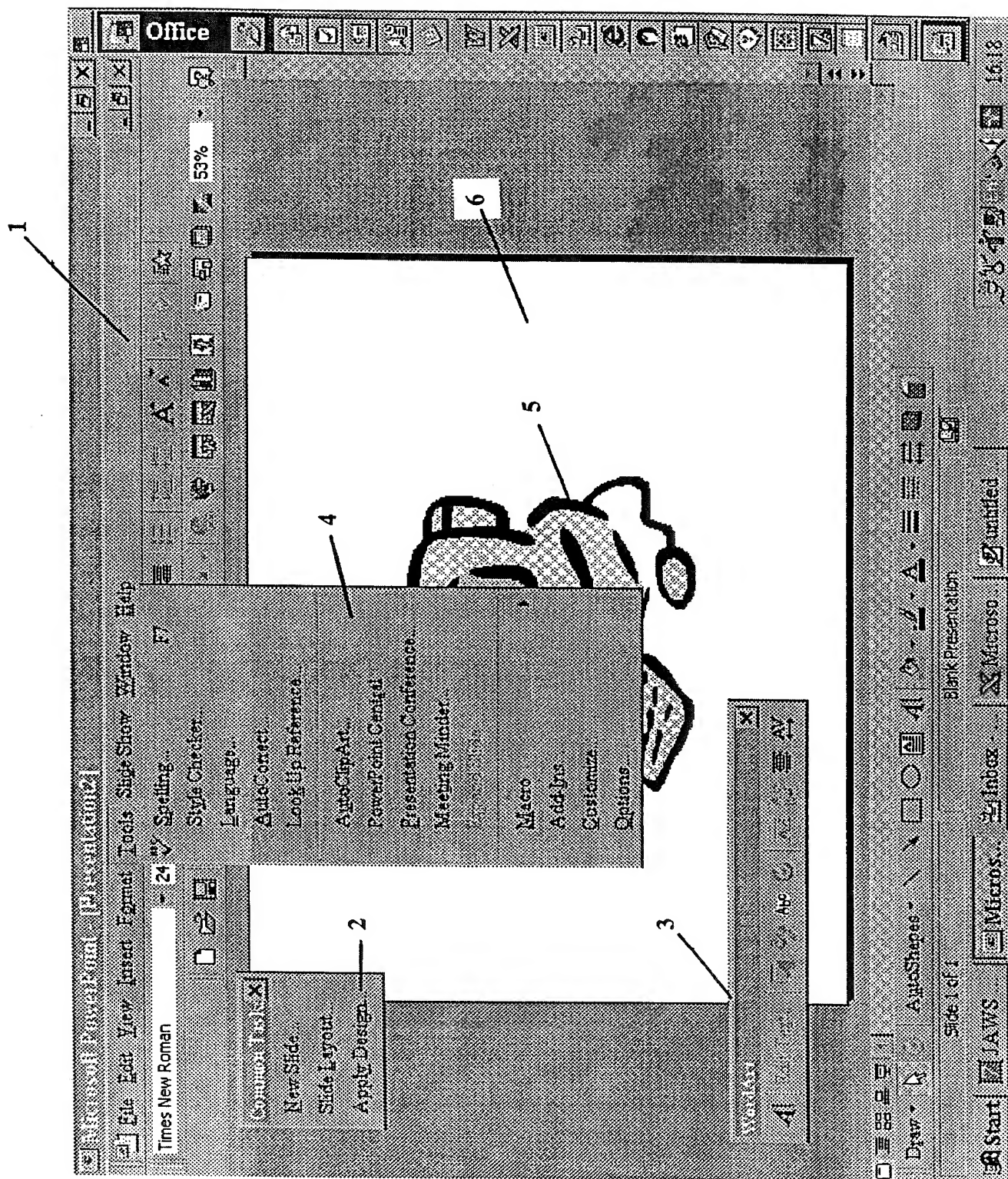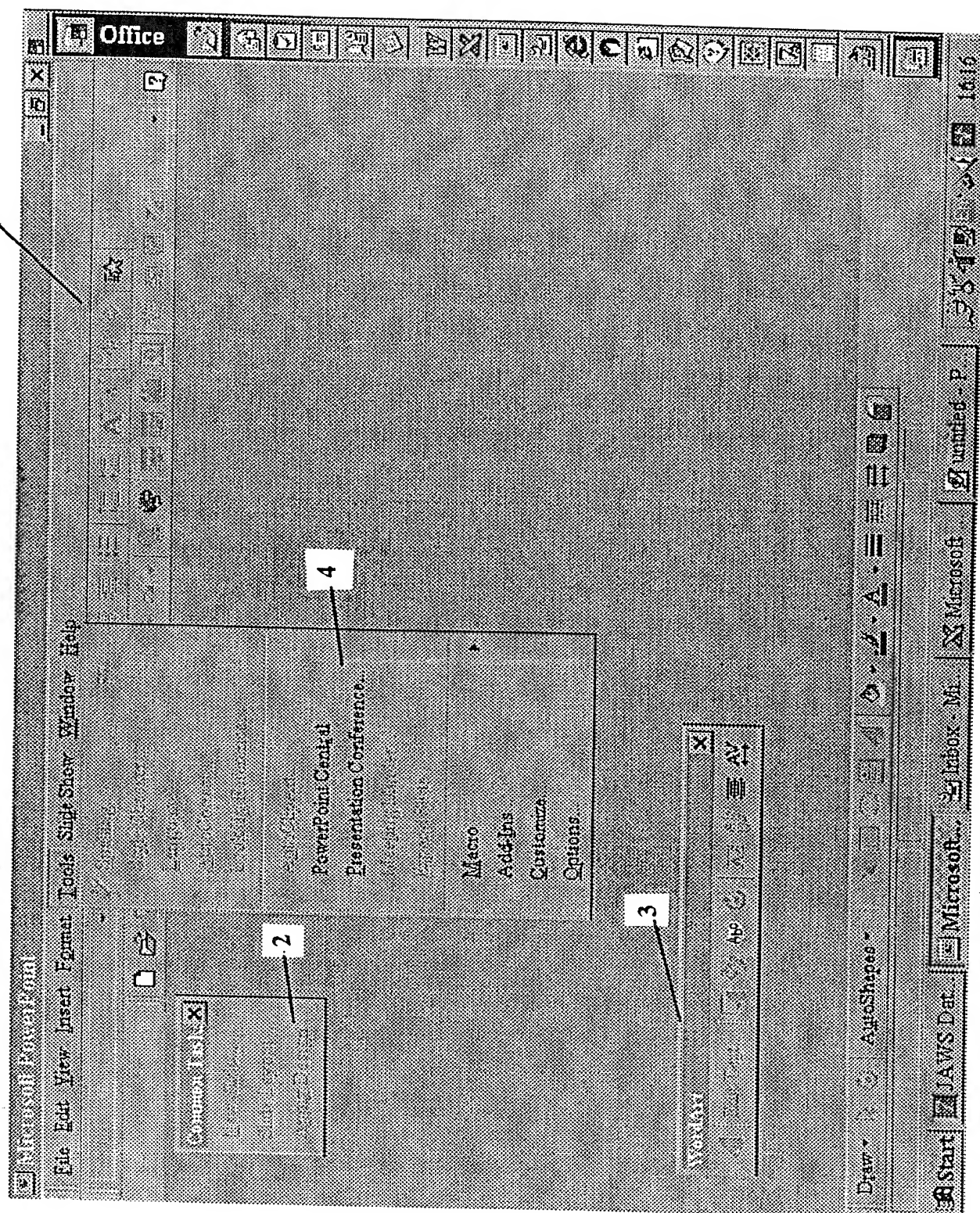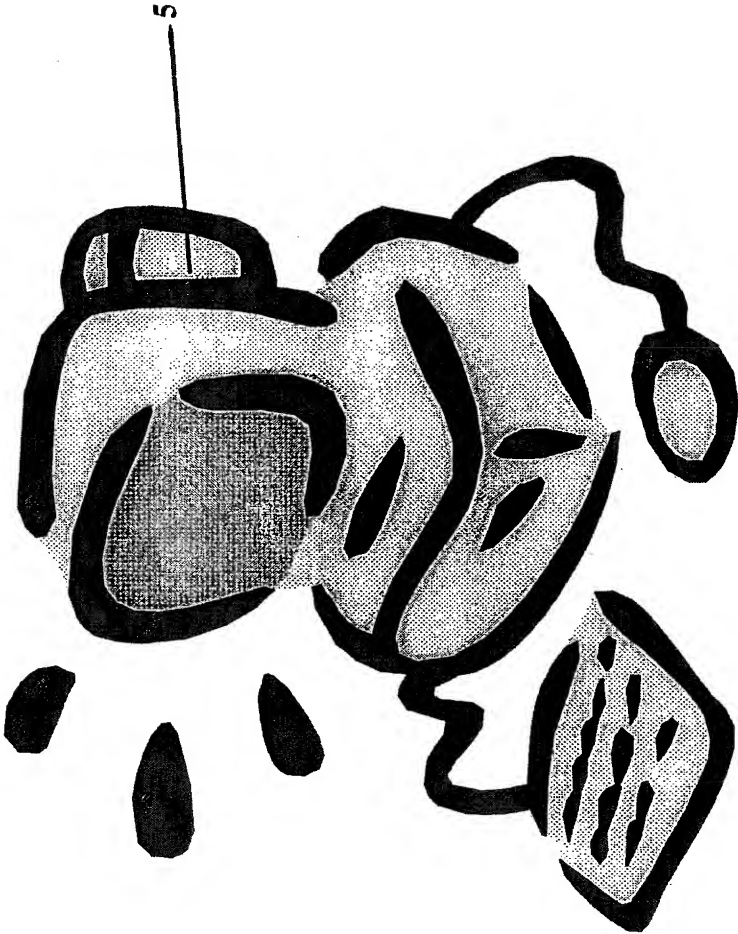13. A web browser incorporating a method as claimed in any one of claims 1 to 10.

Fig.1

Fig. 2

Fig. 3

International application No.
PCT/NZ00/00161

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]:   G09G 3/36, 5/397, G06F 19/00, G02F 1/1347

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G02B, G02F, G06F, G09G, H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI, JAPIO   Keywords: screen, display; overlap, layer, multi; behind, overlap, superimpos, multilevel, layer;
graphic, image, data; program, software, code, driver; three dimensional

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 454423 A (TFE HONG KONG LIMITED) 30 October 1991 Whole document	1-3, 5-8, 12
Y	US 5764317 A (SADOVNIK ET AL.) 9 June 1998 Columns 7-8, 14, Figures 1-4	1-8, 12
Y	EP 595387 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 4 May 1994 Whole document	1-8, 12

☐ Further documents are listed in the continuation of Box C   ☒ See patent family annex

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 December 2000	-2 JAN 2001
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **MICHAEL HALL** Telephone No : (02) 6283 2474

Form PCT/ISA/210 (second sheet) (July 1998)

	International application No.
	PCT/NZ00/00161

Box I	**Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos :   11

   because they relate to subject matter not required to be searched by this Authority, namely:

   A mere presentation of information (PCT Rule 39.1(v)).

2. ☐ Claims Nos :

   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos :

   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II	**Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest   ☐ The additional search fees were accompanied by the applicant's protest.

                                 ☐ No protest accompanied the payment of additional search fees.

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
EP	454423	GB	2245092		
US	5764317	NONE			
EP	595387	JP	6203136	US	5528259

END OF ANNEX